ME – 50

ENCOURAGING STUDENTS CREATIVITY BY SECRET INSIDE BALLOON GAME IN GEOMETRY CLASS

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Abstract

The purpose of this study are encouraging students' creativity by secret inside balloon game in geometry class at mathematics education of The University of Muhammadiyah Purwokerto, The Teacher Trainer and Education Faculty. Analytic geometry learning is implemented in the first semester, so that why lecture are conducted provided color and climate for new students how to study in college. Analytic geometry learning designed to the character, spirit, and a conducive learning atmosphere to the students. So, students can attend and follow in another course in the next semester. So this class implemented by using the game, one of the games that can be done is a secret inside balloon game. This game is to impress students that learning in college are fun and interest. There are three abilities to encouraging students' creativity, they are *synthetic ability*, *analytic ability*, and *practical ability*

Secret inside balloon is create with so many basic learning theories, including the theory of Van Hiele and the theory of Dienes. Therefore learning of analytic geometry can be combined by a variety of games. The Steps are planning, action, evaluation, and reflection.

The analytic geometry that combined by secret inside balloon game is expected to introduce the students that the course or class in college are interesting and encouraging student attention in mathematics.

Keywords: Students creativity, secret inside balloon game, geometry class

Introduction

I was having a think the other day about how some of the jobs that young people will do in the future haven't even been invented yet. It's a crazy thought, but it really is the case and in order to get the most from them, we need our next generation of workers to be creative, and to essentially shape future society. Is it that simple though? Is creativity something that can be taught, or is it something that you either have or you don't? With a national curriculum, standardized testing and schools measured against a certain criteria; have students got the freedom to be as creative as they would like? I guess creativity is a subjective thing; every individual's idea of being creative is different, which in itself sums up the very concept! For some it is inventing new things, new ways of thinking and doing things. While for others, it is about uncovering new forms of knowledge or using existing knowledge in new contexts. Whichever approach they take, all of these require students to have space, and time to think and to experiment.

With students in mind, providing the foundation knowledge around a topic or a project should occur in the classroom. As an environment that also provides an opportunity for students to play with ideas, share thoughts with other students, and suggest new ideas, does it provide the ideal creative backdrop? On the flip side, perhaps stepping outside of that classroom situation is where the ideas come flooding in – when that 'forced' pressure isn't hanging over them. Creativity can inspire students to learn new content through a creative outlet. Classroom lecturers have a constant struggle between teaching content and incorporating creativity into daily instruction. Often state standards limit the lecturer's ability to develop lessons that include

creation in the classroom and lecturers may resort to a more lecturer-centered environment. It is the lecturers responsibility to generate lessons and centers that encourage students to be creative. It is vital that the incorporation of creativity in the classroom is encouraged so that students of varying learning styles are exposed to different ways to learn. After generating a list of potential solutions it was determined that there are two possible ways to incorporate creativity into the classroom. The first option would be to designate a space in the classroom to pique the student's creative outlet. This area is dedicated to creative activities such as a thinking table, drama station, readers' theater or group discussion. An advantage to this solution would be that students are able to move around the classroom throughout the day and are not confined to staying at their desk. It also encourages students to use their imagination through planned or spontaneous dramatic actions. A drawback would be lack of space in a classroom which can make creative stations limited and distracting to the students. The second possible solution would be collaboration of content material with specialized lecturers (art, gym, computer, etc.). By having the specialized lecturer involved in the creation and implementation of lessons the student will gain a varied understanding of the material. A disadvantage would be that specialized lecturers often have their own agenda and expectations. This may lead to a disjointed presentation of the material and lead students to become uninterested or confused.

Mathematics is one of the areas of study that taught at every level of education. Many issues and problems in life that must be solved using mathematical sciences such as counting, measuring, and others. Therefore, mathematics as one of the basic of science has an important role in educating students because it can foster reasoning skills that needed in the developing science and technology. Study of mathematics is divided into several areas, including geometry. The role of geometry in mathematics is very clear, not just guiding the process of thinking but also greatly affect other areas of mathematics. The resolve the problem in geometry, the student must understand the concept first or the properties of the geometry so it is will be easy to understand and solve the problem which is happened in geometry. By looking at those situations, there are many ways to improve the quality of mathematics education. Lecturer or lecturer must teach and learn the activity in class effectively and efficiently. That's why they have a strategy to allow students reach their knowledge, being master the concepts and rules of the material and be able to connect material into real life situation. In this case, especially for new students of Mathematic Subject in University of Muhammadiyah Purwokerto. Lecturer have to introduced how learning in class look like, how to participated their ability in mathematics and how to encourage creativity of students.

In the present, geometry accupies a special position in mathematics curriculum because a lot of concepts contained there in. from the psychological point of view, the geometry consist of representation in visual and spatial experience, e.g field, pattern, measurement, and mapping. Meanwhile, from the standpoint of mathematics, geometry provides approaches to solve that kind of problems such as images, diagrams, coordinate systems, and vectors. From those situations, it can be concluded that in Analytical Geometry course that teach and learn in class a of 1st semester is presented significant learning that students can make the schema concept in their minds, need good process of learning by using game so that process can be fun, memorable, and helpful, the game here is Secret Inside Balloon Game.

The Research Project

The major concern in this research study is the applicability of secret inside the balloon game in geometry course, learning activities, and encouraging the students creativity. The research questions are:

a. *How applicable is the teaching and learning activity based on a secret inside balloon game in geometry course to encouraging the students' creativity?* In particular, The authors were interested in the way the students behaved during the activity.
b. *How does the implementation of secret inside balloon game in geometry course in Math Education Students in Muhammadiyah University of Purwokerto?* In particular, The

authors wanted to find answers to the following questions about the secret inside balloon game: Does it help to correct students' alternative conceptions in geometry course? How do the students behave in the Geometry Course and what difficulties do they experience? What are their opinions about the secret inside balloon game in geometry course?

Regarding the research questions, The authors expected the following to occur during the teaching and learning activities:

a. Concerning the secret inside balloon game: Students will encourage their creativity and become more aware of their mathematical thinking. The situational problem as the starting point helps students to relate what they learn to problems in daily life. The class environment becomes livelier. The lecturer might have difficulty in the beginning to adjust to his new role in the activities; e.g., he might have problems with guiding the class discussion because this is new to him.
b. Concerning the secret inside balloon game: It enables students themselves to construct and interpret geometry that are related to real situations, and this helps to correct their alternative conceptions in geometry course. The class set-up encourages students to become engaged and to be more creative in the work. There might be technical problems related to the Geometry course environment or to the lecturer's capability to master it in a short time.

Previous Research and Theoretical Framework

The research background of this study consists of three elements: students creativity, secret inside balloon game, and geometry course.

Students Creativity

The investment theory of creativity (Sternberg & Lubart, 1995) asserts that creative thinkers are like good investors: They buy low and sell high. Whereas investors do so in the world of finance, creative people do so in the world of ideas. Creative people generate ideas that are like undervalued stocks (stocks with a low price-to-earning ratio), and both are generally rejected by the public. When creative ideas are proposed, they are often viewed as bizarre, useless, and even foolish, and are summarily rejected, and the person proposing them regarded with suspicion and perhaps even disdain and derision. Creative ideas are both novel and valuable. Why, then, are they rejected? Because the creative innovator stands up to vested interests and defies the crowd and its interests. The crowd does not maliciously or willfully reject creative notions; rather it does not realize, and often does not want to realize, that the proposed idea represents a valid and superior way of thinking. The crowd generally perceives opposition to the status quo as annoying, offensive, and reason enough to ignore innovative ideas.

Creativity requires a balance among synthetic, analytic, and practical abilities. The person who is only synthetic may come up with innovative ideas, but cannot recognize or sell them. The person who is only analytic may be an excellent critic of other people's ideas, but is not likely to generate creative ideas. The person who is only practical may be an excellent salesperson, but is as likely to sell ideas or products of little or no value as to sell genuinely creative ideas. The National council of Lecturers of Mathematics Task force on the Mathematically Promising (Sheffield et.al., 1995) characterized our promising young mathematics students in light of their ability, motivation, belief, and opportunity, all considered variables that must be maximized to fully develop a student's mathematical talent. Davis (1969) considered developing creativity in students of mathematics in terms of three major parameters: attitudes, abilities, and techniques (methods of preparing and manipulating information). While 26 years separate these efforts, they offer similar recommendations. In searching for potentially creative student mathematicians, using existing creativity instruments is difficult to do for entire grade levels due to the tie involved in scoring such instruments. Yet, relying solely on lecturer recommendations provides an incomplete picture of the students (Hashimoto, 1997 ; Kohler, 1997).

There have been several instruments developed to measure mathematical creativity (Balka, 1974a; Evans, 1964; Getzels & Jackson, 1962; Haylock, 1984; Jensen, 1973; Singh, 1988). Of this group, Balka's was selected for use in this study because available instrument with a sufficient discussion. The resulting criteria to measure creative mathematical are following:

a. Ability to formulate mathematical hypotheses concerning cause and effect in mathematical situations
b. Ability to determine patterns in mathematical situations
c. Ability to break from established mind sets to obtain solutions in a mathematical situation
d. Ability to consider and evaluate unusual mathematical ideas, to think through the possible consequences for a mathematical situation
e. Ability to sense what is missing from a given mathematical situation and to ask questions that will enable one to fill in the missing mathematical information
f. Ability to split general mathematical problems into specific sub problems.

According those theories, the authors can make a summary about how to encouraging creativity of students in Geometry Class they are:

a. *Synthetic ability* is what we typically think of as creativity. It is the ability to generate novel and interesting ideas. Often the person we call creative is a particularly good synthetic thinker who makes connections between things that other people don't recognize spontaneously.
b. *Analytic ability* is typically considered to be critical thinking ability. A person with this skill analyzes and evaluates ideas. Everyone, even the most creative person you know, has better and worse ideas. Without well-developed analytic ability, the creative thinker is as likely to pursue bad ideas as to pursue good ones. The creative individual uses analytic ability to work out the implications *of* a creative idea and to test it.
c. *Practical ability* is the ability to translate theory into practice and abstract ideas into practical accomplishments. An implication of the investment theory of creativity is that good ideas do not sell themselves. The creative person uses practical ability to convince other people that an idea is worthy. For example, every organization has a set of ideas that dictate how things, or at least some things, should be done. To propose a new procedure you must sell it by convincing others that it is better than the old one. Practical ability is also used to recognize ideas that have a potential audience

Secret Inside Balloon Game

The interest in game based learning has accelerated considerably in recent years. Developers and researchers are working in every area of game based learning, including games that are goal oriented, social game environments, non digital games that are easy to construct and play. (Ross, 2000; Tayman, 1996) Games developed experessly for education and commercial games that lend themselves to refining team and group skills. More complex approaches like role playing, collaborative problem solving, and other forms of simulated experiences have broad applicability across a wide range of disciplines, and are beginning to be explored in more classrooms. Using gaming as a vehicle for learning is a very powerful idea and one that is under utilized. There are so many ways lecturer can do with games in their classroom, such as:

- *Team Building Games:* Some of most common games used in education are games intended to build relationships between two people or between teams. In a classroom setting, where team games may lack in the teaching of information they make up for by teaching communication and cooperation skills.
- *Board and Card Games:* boar games, card games and other individual activities are good motivational tools in education. These games teach students to learn from their mistakes and accomplish goals while simultaneously having fun. While supportive of games as a

supplement to education, contends that the best way for a student to learn something is by someone teaching it directly to them.

- *Electronic Games:* video games and computer games are becoming more accepted in the school environment because most student have an element of expertise in electronic gaming, their capacity to learn in that real will be higher than in a typical classroom setting.
- *Edutainment:* as technology advances and students are exposed to video games, television and the internet at younger ages, educators are increasingly interested in "edutainment"", or combination of education with entertainment. Using technology in a learning environment is especially helpful when students are learning complex topics because it develops "higher order thinking skills:.
- *Drawbacks to Edutainment:* although most lecturers agree that there are benefits to fusing electronic gaming with education, many lecturers haven't received adequate training as games to feel comfortable using an electronic game in their curriculum. The benefit of a game can only extend so far without the support of a knowledgeable lecturer. Because students need a lecturer to link the game to specific lesson, it is essential for lecturer to understand games before applying them to the classroom.

Many various ways that can do by the lecturers to make classroom learning process more interesting for students, so the authors make a strategy in its class by secret inside balloon game. It is created by team building combines with the balloon. The balloon game is a simple and fun way to deliver an attention grabbing event that will raise awareness of some of the issues faced by refugees and asylum seekers. It uses the challenge of simultaneously juggling the balloon to encourage participants to empathise with the situations new arrivals face.

Secret inside the balloon can be done by groups with each group was given the responsibility to carry out the game together. Form of the games is using the balloon which there is a math problem inside. The score can be achieved by the group that can solve the problem, otherwise if it can not resolve the problem, then the group will get a penalty in the form of a reduction in the existing score. Each group is obliged to make a problem and solve it. Then the problem written on paper and put into the balloon that has been provided. The balloon is then to another group to finish. Each member of the group assigned to analyze and explore the completion of the existing problems. This game process can be performed to assess creativity, responsibility, and student active in class.

Figure 1. Lecturer provides guidance to students about secret inside balloon

Geometry Course

(Babango, 1993; Colburn, 2000; Sloan, 1996) Geometry can be difficult to teach due to the broad range of included concepts. Some of the brightest minds have shied away from teaching it. Although the ghought of explaining Euclidean and non-Euclidean principles may seem overwhelming, it becomes easier when you are prepared. Some of instructions to teach geometry must have, they are: 1) Understand the principles and applications of geometry. Geometry is an area of math which many find confusing and difficult to learn. You will need a through knowledge base to handle questions and be able to reinforce lessons. 2) Encourage memorization of geometry concepts, theorems, and formulas. A key component to successfully mastering geometry is familiarity with it's "tools". Quiz geometry students on a regular basis to

ensure a solid foundation is formed. 3) Present each geometry concept with clear explanations. Discuss each new area in depth before attempting to solve problems. Use worksheets and handouts to visually explain ideas. 4) Build upon previous geometry lessons. Think of teaching geometry like building a house. Don't rush to advanced concepts like tessellations without mastery of common axioms. 5) Demonstrate the practical applications of geometry. Making geometry relevant to everyday life will make the lessons more appealing. And 6) Reinforce previous geometry concepts. The goal is to provide continual learning with a passionate stance against cramming information for test taking purposes. Geometry lessons should logically build on prior knowledge.

By those theories the authors can conclude how to help students to learn a geometry concept, they are: 1) Show students both correct and incorrect examples of the geometric concept. Show the concept in different ways or representations. Ask the students to distinguish between correct and incorrect examples. This will help prevent misconceptions. 2) Ask students to draw correct and incorrect examples themselves. 3) Trying in with the previous point, ask the students to provide a definition for a concept. This gets them to thinking about which properties in the definition are necessary and which are not. 4) Allow the students to experiment, investigate, and play with geometrical ideas and figures. Use manipulatives, drawing, and apps or software (more on them below). 5) Have students make their own geometry notebook, filled with examples, non examples, definitions, and other notes and drawings.

Design of Classroom Activities

In this section The authors give a short impression of how the classroom meetings went. For a written meeting-by-meeting account we refer to the extended research report (Widjaja, 2002).

At this meeting, students will study about vectors. In learning students are asked to find the concept itself and its friends group. Therefore, before starting the discussion the students were divided into groups with each group consisting of 4-5 people. Once a student looking for the concept of a vector, then the students were asked to play a role in secret inside the balloon. What happens in secret inside the balloon game? That questions can be answered by the following step:

a. Make one problem which related by material on learning today
b. Problem is made in the paper available
c. Make the key answer of the question on a separate sheet of paper about
d. The answer key is made in the other paper
e. Time to answer the questions are 10 minutes
f. Once the matter is made, then put into a balloon that has been provided
g. Each balloon is available with a different value with the auction system
h. Then the balloon is opened and do on the problems that exist in it. If the matter is done right, then the value which obtained in accordance with the existing value in each balloon.
i. Conversely, if the matter can not be done obtained or done incorrectly, then the group will be reduced in accordance with the value of the value in the balloon.

Research Design and Methodology

This research is a qualitative descriptive study based learning stages of lesson study. The study was conducted in the first semester of the academic year of 2014/2015 at the University of Muhammadiyah Purwokerto (UMP). The subjects of this study is the first semester students of class A UMP Mathematics Education that cover in Analytic Geometry Course of odd semester academic year of 2014/2015.

The research was conducted by four cycles with each cycle stages are follow:

a. *Plan*

The purpose of this stage is to design learning that provide solutions to the problems and event arise ever conducted by lecturer models. At this stage, the lecturer and the

observers do plan what will do for next meeting. Implementation of this phase is a lecturer provide learning tools to observer then performed an evaluation of the plan. Learning tools consists of a unit of learning lecturer event, seating charts, and lesson observation sheet. Lessons are conducted in a student-centered learning with the aim of encourage the students creativity.

b. *Do*

The aim of this stage is to carry out the accordance with the planning of learning that has been produced on plan stage. At this phase, the lecturer teaching practice with the agreement on the plan stage. The lecturer and students activities are based on the lesson plan which has been agreed. Observer must record students activities that require attention and development of creativity. The observers guide based on observation is student seating, lesson plan, and observation sheets. This observer guide is in accordance with the agreement that has been formed at the stage of the plan.

c. *See*

The purpose of this stage is to perform reflection and evaluation of the implementation of learning on Do stage. Implementation of this phase begins with the presentation of a model for the implementation of instructional faculty that has been done. Lecturer model provides self-reflection on what is perceived and what happens during the activity of learning take place. The lecturer can also reveal the difficulties experienced during the implementation of learning. Activities in this phase continued with the presentation by the lecturer observer on finding obtained during the implementation Do stage. The findings that can be either positive or negative on the implementation of learning and encourage the creativity. The next activity at this stage is feedback from the observer which consists of many problems that they got. The result of this stage can be good discussion on the next cycle.

The collecting data from this study are:

a. Observation

The observations made during the learning process that is on the Do stage. Implementation of the observations made by the observers.The observation sheets consist of questions about implementation of learning, encouraging the creativity and many problems that found by the observer during the learning process

b. Questionnaire

The questionnaire was given to the students in order determine the learning process and encouraging creativity of students after the learning process in class. The questionnaire were used in the form of statements enclosed to describe the creativity and learning process in students.

c. Documentation

The documentations used in form of video recording, photos and files of students from each implementation of plan, do, and see.

The data that have been obtained and analyzed qualitatively. Those data was found by data reduction, data presentation, and conclusion. Data reduction is focused on activities related to student creativity in learning. From the results of data reduction, it will be presented in pictures or description of explanation. Next analyzed is performed conclusion by observing and combining of various data obtained.

Findings and Analysis

Information from all data sources was examined in relation to the concerns and questions of the study. Results are presented in this section. Readers interested in more details can find them in the extended research report (Widjaja, 2002).

Students activities in Secret Inside Balloon Game

a. Make one problem which related by material on learning today and made on the paper.

Learning begins with the process of finding a concept that is based on group discussions. Each group must find a concept that is being studied. Once the concept is found by each group learning, lecturers provide direction to integrate perception and concept created by students. Once the concept is embedded, then created a problem that is based on the concept that the issue was made in a piece of paper that has been provided by the lecturer. This step is the first step in secret inside balloon game.

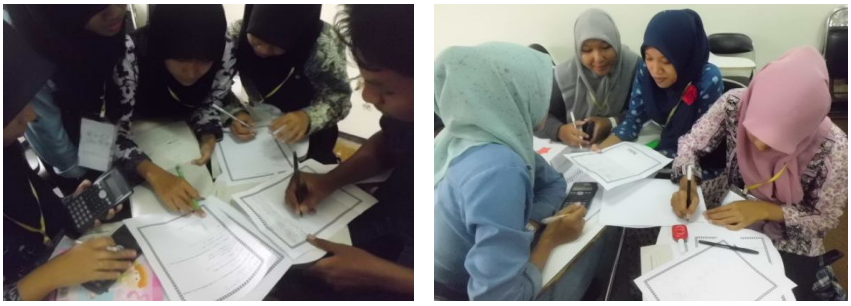

Figure 3. Students discuss with their group about creating one problem and an answer key for it

b. Make the key answer of the question on a separate sheet of paper about

Problems that have been made by each group, and then made the key answers to these problems. Problems are created and then put into the balloon, blow up it and given to another group to be resolved. The process of solving problems that exist are given a time limit of 10 minutes.

c. Each balloon is available with a different value with the auction system

In the balloon are already available value that could be obtained if the group can solve the problems that exist in the balloon. If the group can not solve existing problems or settlement is done wrong then the value will be reduced in accordance with what is in the balloon.

Figure 4. Students blow up the balloon which is take the problem inside previously

d. Then the balloon is opened and do on the problems that exist in it. If the matter is done right, then the value which obtained in accordance with the existing value in each balloon.
In every balloon there is a problem to be solved by each group learning. The problem is the concept of learning is done that day. So after children seek material concept of geometry, they are trying to create problems and solve them. The value obtained from any content on these problems, if any participant wrong or could not solve existing problems, then they will be reduced in value based on the value they get from the contents of the balloon.

e. Conversely, if the matter can not be done obtained or done incorrectly, then the group will be reduced in accordance with the value of the value in the balloon.
The problems should be solved obtained with bounded time, Each group should have a performance, strategy, and how to resolve the problem well and quickly. When they do not have a good strategy, then they will be difficult to solve existing problems, because the problem is timeless. The groups that resolve problems that exist in the balloon properly, then the value obtained will be in accordance with the value stated in the balloon, on the contrary, if they fail and wrong doing, then the value will be reduced in accordance with the value they get inside the balloon.

Encouraging Creativity from Secret Inside Balloon Activities

a. *Synthetic ability*
is what we typically think of as creativity. It is the ability to generate novel and interesting ideas. Often the person we call creative is a particularly good synthetic thinker who makes connections between things that other people don't recognize spontaneously. The process of looking for a way to solve the problem is done by the discussion in the group, as well as independently process assisted with existing learning resources. These skills indicate that independence in learning and active participation of students in the process of discussion has been able to run well for mathematical ideas such as looking for a long segment for example can be done in several stages and evaluate all of these steps correctly by using the symbol or by using the form graph. How to impress those can be seen from the results of Ilhams work following below.

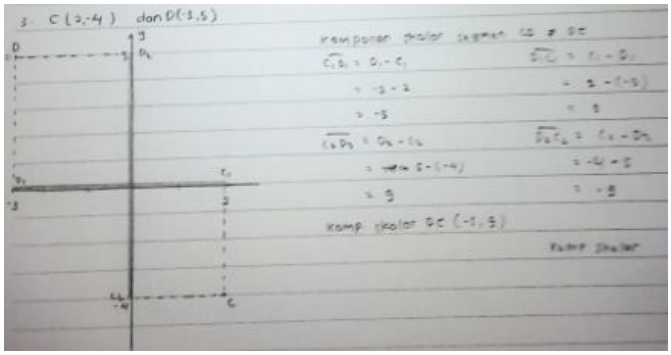

Figure 5. One of synthetic ability that express from Ilham's work

b. *Analytic ability*
is typically considered to be critical thinking ability. A person with this skill analyzes and evaluates ideas. Everyone, even the most creative person you know, has better and worse

ideas. Without well-developed analytic ability, the creative thinker is as likely to pursue bad ideas as to pursue good ones. The creative individual uses analytic ability to work out the implications *of* a creative idea and to test it. Almost all students are able to do the task in the classroom and at home with good way. For example Arum can do the job as well as possible, it is seen she can do the job diligently. Doing in class and calculate a segment length by operating the position of two lines. This is illustrate of Arums task how creative she is, belows:

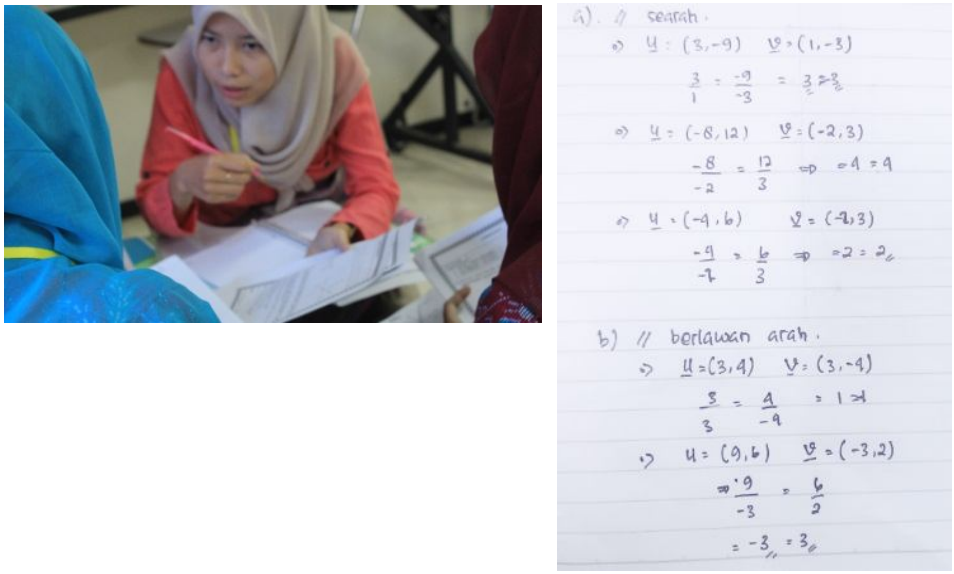

Figure 6. Students give her ideas with their group and express those ideas in their work

c. *Practical ability*

is the ability to translate theory into practice and abstract ideas into practical accomplishments. An implication of the investment theory of creativity is that good ideas do not sell themselves. The creative person uses practical ability to convince other people that an idea is worthy. For example, every organization has a set of ideas that dictate how things, or at least some things, should be done. To propose a new procedure you must sell it by convincing others that it is better than the old one. Practical ability is also used to recognize ideas that have a potential audience. In general, Secret inside the balloon can be done by many steps. Students are enthusiastic in solving existing problems and help each other to solve those problems. Students now have started to dare to express their opinions, ideas, or objections to the class, as well as in the group.

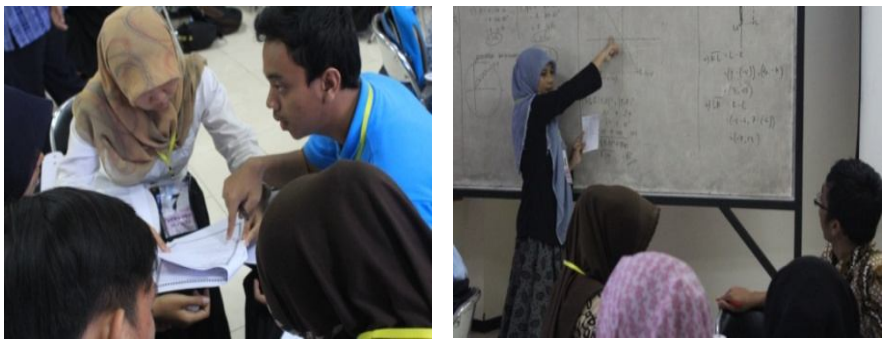

Figure 7. Students practical ability in their group and in front of the class

Discussion and Recommendations

To optimize the learning outcomes, the learning process should use a whole-brain approach. According to Potter (2002), when humans communicate with words, the brain at the same time have to find, sort, formulate, tidy up, organize, connect, and make a mixture of ideas with words that already have that meaning can be understood . At the same time, these words strung together with a picture, symbol, image (impression), sounds, and feelings. A set of words that no sequential mixed in the brain, came out one after another, connected by logic, and generate meaning can be understood.

Playing is a common phenomenon that occurs in all the human. Playing is a flurry of self-selected without no element of coercion. It fits perfectly with the spirit of imaginative students. So if nurtured properly, it can support encouraging creativity of students learning. In addition, an important means game to socialize the student become a member of a community so that they get to know and appreciate other community members, but unfortunately many parents consider the case that the game is not important, so they often ignore. Nowadays the need for the development of the education system in Indonesia is increasing from year to year. Was once considered the most effective conventional systems and has been applied in the teaching and learning activities, but this learning system is no longer able to keep up with the times. Based on that later emerged a new learning method that is expected to increase students's interest in learning.

Geometry occupies a special position in the secondary mathematics curriculum, because of the many concepts contained therein. From the psychological point of view, the geometry of an abstract representation of the visual and spatial experience, eg field, pattern, measurement and mapping. Meanwhile, from the standpoint of mathematics, geometry provides approaches to solving problems, such as images, diagrams, coordinate system, vectors, and transformation. Geometry is also an environment to study the mathematical structure. Usiskin argued that:

- The geometry is a branch of mathematics that studies the visual patterns,
- The geometry is a branch of mathematics that connect mathematics with the physical world or the real world,
- The geometry is a way of presenting a phenomenon that does not look or not physical, and
- The geometry is a mathematical system example

The purpose of learning geometry is that the students gain confidence about her math skills, be a good problem solver, able to communicate mathematically, and to reason mathematically. Beside that learning geometry is developing the ability to think logically, develop spatial intuition, imparting knowledge to support other materials, and can read and interpret mathematical arguments. Basically geometry has a greater opportunity to understand the students compared with other branches of mathematics. This is because the ideas of geometry already known by students since before they enter school, for example, line, plane and space. However, the evidence on the ground shows that the geometry of learning outcomes is low and needs to be improved. In fact, among the various branches of mathematics, geometry occupies the position of most concern.

There is a significant difference between the learning method using the game and without game. The learning method using the game can increase creativity, imagination, and innovation in students. So with interactive educational games, learning can be done effectively and efficiently. Teaching and learning process will run fun and not boring. By contrast, the learning method without using the game. The ability of creativity, imagination, and innovative in students is not so well developed as a method of learning that only focus on theoretical basis alone. So that this kind of learning methods by some students felt quite boring and that is the one reason why students become lazy in learning.

Active learning includes use of creative stuffs like games, concepts, maps and study materials. Active learning can only be encouraged when student enjoys the learning environment. Here are some ideas through which lecturers can cultivate creative thought through active learning.

- Create interactions that provide students a lot problem-solving opportunity
- Give them a lot of opportunities for hands-on field work
- Organize round-table discussion time to time on interesting topics
- Permit students to create some of the question for their upcoming exam

One factor that is often considered to be important is to foster the creativity of young students to learn is the subject matter itself and lecturers deliver lessons that (Sarwono, 2006) considering of the various reasons for learning, then learning innovation is essential to apply the learning process. Learning innovation is needed in order to improve the efficiency, relevance, quality and effectiveness. Innovations expected students to be active human, creative and skilled solve their own problems (Yudrik, 2003: 23). According to (Santoso, 2002: 147) creativity for students is a game. Since infancy, they have developed a wide range of creative play. Therefore, the learning method with the game is the first step towards creativity students. The example one is secret inside the balloon. With this game the author wants to deliver and foster student creativity in the classroom and can be maximized to study at home or outside the classroom.

Secret inside the balloon game has many advantages. In addition students are not bored in the study, the subject matter becomes younger transmitted from lecturer to student. In addition, interactive educational games are also able to condense the time required to complete a competency because with this game the students more quickly capture the lessons that can save time to educate them. The steps are:a) make one problem which related by material on learning today, b) problem is made in the paper available, c) make the key answer of the question on a separate sheet of paper about, d) the answer key is made in the other paper, e) time to answer the questions are 10 minutes, f) once the matter is made, then put into the balloon that has been provided, g) each balloon is available with a different value with the auction system, h) then the balloon is boomed and do on the problems that exist in it. If the matter is done, i) conversely, if the matter can not be done obtained or done incorrectly, then the group will be reduced in accordance with the value of the value in the balloon.

Conclusion

The purpose of this study to cover and description of analytic geometry learning in mathematics education of The University of Muhammadiyah Purwokerto, The Teacher Trainer and Education Faculty. Analytic geometry learning is implemented in the first semester, so that why lecture are conducted provided color and climate for new students how to study in college. Analytic geometry learning designed to the character, spirit, and a conducive learning atmosphere to the students. So, students can attend and follow in another course in the next semester. So this class implemented by using the game, one of the games that can be done is a secret inside balloon game. This game is to impress students that learning in college are fun and interest.

As a researcher, examining these questions has suggested some answer but has raised many more questions. How applicable is the teaching and learning activity based on a secret inside the balloon game in geometry course? How does the implementation of secret inside the balloon game in geometry course in Math Education Students in Muhammadiyah University of Purwokerto? Finally, I hope this research will stimulate others to continue the research, verify, modify, or apply it.

Acknowledgement

The authors would like to thank to Ahmad as The Dean of Teacher and Training Faculty in University of Muhammadiyah Purwokerto for his critical comments and encouragement during the research project. And last but not least, the authors would like to thank to my lovely wife Aulia Nisa Khusnia for giving me spirit, support, and love, the last surely not but least to my baby Frans Daya Danadyaksa for creating this world more beautiful.

Note

The first author conducted this research study as his final project in Lesson Study in Mathematics Education, University of Muhammadiyah Purwokerto, Central Java, Indonesia.

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